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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,764	07/30/2003	Akira Aoto	10517/80	7701

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WASHINGTON, DC 20005

EXAMINER

RUTHKOSKY, MARK

ART UNIT PAPER NUMBER

1745

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/629,764

Applicant(s)

AOTO, AKIRA

Examiner

Mark Ruthkosky

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

The rejection of claims 1-4, 6 and 7 under 35 U.S.C. 102(b) as being anticipated by Meacher et al. (US 5,858,569) has been overcome by applicant's amendment.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meacher et al. (US 5,858,569) in view of Hiroshi et al. (JP 11-339,828) OR unpatentable over Hiroshi et al. (JP 11-339,828) in view of Meacher et al. (US 5,858,569) and further in view of Yoshimura et al. (US 6,291,094.)

The instant claims are to an apparatus comprising a separator for a fuel cell comprising a metal plate including a gas passage portion and a contact portion in a part other than the gas passage portion, and a terminal of a cell voltage monitor. The contact portion contacts the terminal of a cell voltage monitor, and wherein a surface treatment on the gas passage portion is different from a surface treatment applied to the contact portion.

Meacher et al. (US 5,858,569) teaches a separator for a fuel cell comprising a metal plate including a carbon coated gas passage portion and a contact portion in a part other than the gas passage portion, wherein the carbon-coated surface treatment applied to the gas passage portion is different from a surface treatment applied to the contact portion. The untreated frame/stainless steel section is a contact portion other than the gas passage portion and also serves as an attachment portion. A gasket frame portion is noted (cols. 5-6.) Meacher et al. (US 5,858,569) does not teach the contact portion being brought into contact with a terminal of a cell voltage monitor attached to the fuel cell.

Hiroshi et al. (JP 11-339,828) teaches a fuel cell stack with a voltage-measuring terminal attached to the sidewall of the separator plate. The fuel cell separator plates have a protruding terminal integral with the separator for measuring the voltage of each cell in the fuel cell stack. The separator may be graphite, aluminum and stainless steel (paragraph 28.) The terminal is engaged with a voltage monitor (paragraphs 12-29.) The attachment portion is attached in the direction wherein a plurality of frames are stacked as taught in figure 1. Hiroshi et al. (JP 11-339,828) does not teach the metal separator plate is coated with a carbon layer in the area of gas flow along the separator plate.

It would be obvious to one of ordinary skill in the art at the time the invention was made to attach a terminal in the manner taught by Hiroshi et al. (JP 11-339,828) to the frame portion of the separator plate of Meacher et al. (US 5,858,569) in order to measure the voltage of each cell in the fuel cell stack as taught by Hiroshi et al. (JP 11-339,828.) The attachment portion may be attached to the stainless steel frame by soldering or welding as taught by Hiroshi et al. (JP 11-339,828.) As the outer surface of the plate is not coated, it would be accessible to the exterior

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measuring device. Further, the skilled artisan would understand that the welding of the metal lead to the metal plate would provide a secure weld as compared with the carbon coating.

It would be obvious to one of ordinary skill in the art at the time the invention was made to coat the gas flow portion of the separator plate taught by Hiroshi et al. (JP 11-339,828) with the carbon layer of material on of the separator plate of Meacher et al. (US 5,858,569) in order to produce gas low through grooves and to form an electrically conductive path for current generated in the groove regions of the cell to flow laterally to areas where the contacting portions of the separator plates. It would further be obvious to one of ordinary skill in the art at the time the invention was made to apply a conductive coating to the stainless steel plate. Hiroshi et al. (JP 11-339,828) teaches the plate may be of aluminum or stainless steel. For example, one of ordinary skill in the art would be motivated to coat the stainless steel plate with an aluminum coating as Hiroshi et al. (JP 11-339,828) teaches aluminum as a conductive separator material that forms a bond with a protruding terminal. Further, the contact faces between adjacent separators can be provided with sufficiently high electronic conductivity and the internal resistance of the cell can be reduced to increase the output voltage of the fuel cell (as evidenced by US 6,291,094.)

With regard to claims 9-10, the references do not teach the entire gas passage is treated with a coating. Yoshimura et al. (US 6,291,094) teaches a fuel cell comprising a grooved metal plate including a carbon coated gas passage portion and a contact portion in a part other than the gas passage portion, wherein the carbon-coated surface treatment is applied to the entire gas passage portion and is different from a surface treatment applied to the contact portion. The separator includes a metal such as stainless steel, coated with a protective, conductive layer

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followed by a coating of carbon. The carbon may selectively added to the gas passage areas (see col. 14.) The untreated frame/stainless steel section is a contact portion other than the gas passage portion and also serves as an attachment portion. It would be obvious to one of ordinary skill in the art at the time the invention was made to form the gas passage as part of the metal plate and coat the entire gas passage with carbon as taught in Yoshimura et al. (US 6,291,094.) The coatings will provide corrosion resistance and high conductivity for the transfer of electrons in a fuel cell. The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

#### ***Response to Arguments***

Applicant's arguments, filed 10/14/2005, with respect to the amended claims have been fully considered and are persuasive. Different treated surfaces in the Meacher reference are taught in claim 1. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.

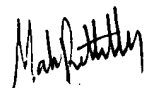
#### ***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

Mark Ruthkosky  
Primary Patent Examiner  
Art Unit 1745

  
12-20-2005